GLINKOV, M.A. doktor tekhnicheskikh nauk, professor.

Principles of fluid mechanics in baths and the hent-working of open-hearth furnaces. Stal' 16 no.4:356-358 Ap '56.(MERA 9:7) (Open-hearth furnaces)

GLINKOV. M.A.: professor, doktor tekhnicheskikh nauk; MEN'SHIKOV, R.I., kandidat tekhnicheskikh nauk.

Investigating heat exchanges in open-hearth furnace combustion chambers. Shor. Inst. stell no.35:146-157 '56. (MIRA 10:8)

1. Kafedra metallurgicheskikh pechey. (Open-hearth furnaces) (Heat--Transmission)

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Translation from: Referstioney zhurna! Mer Uargiya 1997 Noot p. 39 (USSR)

AUTHORS: Glinke, M.A., Krivendin, V.A.

TITLE The Pressure Distribution in Highstemperature Ceranic Recupers

it in (Raspredeleniye davleniy v vy okotemperaturnskh

keramicheskikh rekaperatorokh)

PERIODICAL V b : Progress dall Moscow Me Blang ada: 1956, pp 158-165

ABSTRACT: A report on experiment, on the determination of the pressure drops of the air and of the times in ceremic recipes (ors (R) - n

which the flux pases proceed downward through versical since and the sir moves in a loop chaped path from the bottom toward the topputting horizontally between the anguered Amagas pires. In order to determine the presented drop, of the air and the alms gages at any point in the R<sub>c</sub> if is necessary to know their ertrance pressures. and the pressure at the given point of the R. The pressure change of the Postages is readily computed since the finishieral registance

and the geometric head are known. The computation of the relie-

tance to the movement of air 1, more compileated. We composed of the relations of the relationship of Card 1/2

1.37 1937 15 15.31

The Presence Distribution in High-temperature Ceramic (cont.)

the end of each group. The resistance of such turns, which depends on the velocity of air and on the number of the rows of open orifices, was determined by means of an aerodynamic model of the R. At  $\rm R_e \geq 4700$ , the resistance of the turns remains constant. When the number of rows of open orifices is increased from 1 to 4, the resistance is considerably reduced: however, any further increase in the number of rows of open orifices has almost no effect and the resistance remains practically constant.

M.R.

1. Jeremie receier tord-Frankura distribution

Card 2/2

GLINKOV. M.A., professor, doktor tekhnicheskikh nauk; VAVILOV, N.S., kandidat tekhnicheskikh nauk.

Heat exchange in metallurgical furnace combustion chambers. Sbor. Inst. stali no.35:166-185 '56. (MIRA 10:8)

1. Kafedra metallurgicheskikh pechey. (Metallurgical furnaces) (Heat--Transmission)

CLINKOV M.A. professor, doktor tekhnicheskikh nauk; ERIVANDIN, V.1., kandidat tekhnicheskikh nauk.

Characteristics of heat exchange at the stack side of a tubular ceramic recuperator. Sbor. Inst. stali no.35:186-200 '56.

1. Kafedra metallurgicheskikh pechey.

(Heat regenerators) (Heat--Transmission)

### "APPROVED FOR RELEASE: 09/24/2001

CIA-RDP86-00513R000515410006-9

. 37 3947 12-23:38

Translation from: Refer tivnyy zhurn ( Metabbarg.y + 1957 Nr 11 p 40 (USSR)

AUTHORS: Glinkov, M. A. Markov, B. I

TITLE: The Fusion of a Layer of a Metallic Charge Heated From Above

(Playlenive slova metallicheskey shikhty nagrevayemogo sverkhu)

PERIODICAL: V. b.: Preiz-vo stali, Moscov, Metallinguidat, 1936, pp. 117-238

ABSTRACT: To conduct taberatory undie of the process of fillion (F) of a metallic charge (Ch), an experimental installation was designed

which consisted of two adjoining chambers an upper chamber containing the heating unit and a lower chamber commaning the busin with the fasible charge. In order to reduce beat he es the internal surfaces of the chambers were costed with Ag and equipped with a v tem of evaporation cooling. Phase elected at the charge moterial because it may be utilized no horges of all shapes and dimentions. The charge was placed and exteel hell fitting snugly into a steel cylinder equipped with a mechcover intended to prevent the charge from rising the a the top

of the cylinder. The upward movement of the thell to coomplished by means of a special rod activited through weight Card 1/2

Promotion.

137 1957-17 23138

The Fusion of a Layer of a Metal Charge Heated From Above

The edvince of the rod is a measure of the settling of the charge. To prevent the oxidation of the Photo books. filled with No. For all fusion processes readings are taken on the variation of the height of the charge layer with time, the amount of heat imparted to the charge, and the temperature satisfied points of the liver. A serie- of fullons, identical in all respects, was performed with interruptions in order to the error the condition of the charge of various stage. A study of the charge cooled of different stages of the fusion process showed that the melt did not flow to the bettom but that it advanced downward along a lingle from enveloping the colid lump and giving up it heat to them. In rapid fur on the melt filled all space, between the lumps, thereby preventing the liquid melt from transfering heat to the lower layers of the charge. From an indvs: of the experimental melts the fusion process may be divided into three stage of the heating of the surface of the charge to the mesting page, the to lonproceding the complete settling of the layer and the fusion after the complete lettling of the layer and ofter the form tion of a free liquid urface

Card 2/2

M R.

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# "APPROVED FOR RELEASE: 09/24/2001 CIA-RDF

CIA-RDP86-00513R000515410006-9

137-58-6-11678

Translation from Referativnyy zhurnal. Metallurgiya, 1956. Nr.6, p. 65 (USSR)

AUTHORS Glankov, M.A., Men'shikov, R.I., Morozov, V.A., Shorin, A.F.

TITLE Thermal Operation of an Open-hearth Furnace When Oxygen is Used to Intensify the Combustion Process (Teplovaya rabota martenovskoy pechi pri primenemii kisloroda diva intensifikatsii protsessa goreniva)

PERIODICAL, V sb. Primenemye kisloroda v metallurgii. Moscow, Metallurgizdat, 1957, pp 95-114

ABSTRACT Results are presented of an investigation on the introduction of O into the flame jet through a tuyere from the sides of the duct into a 200-t furnace at the "Zaporozhstal" Works. When the oxygen enrichment of the air is 25% and the maximum heat input is 33.2 mill, kcal/hr, output rose by 32.2% and the nominal consumption of fuel dropped by 10.8%. With 30% enrichment and a maximum heat input of 33.4 mill, kcal/hr, the figures were, respectively, 61.0 and 35.0% of those of non-oxygen heats. Ratios for output and unit fuel consumption to average thermal stress and degree of enrichment of the air by O2 are given. The following factors are examined—the conditions of

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Thermal Operation of an (cont.)			į
temperature in the course of a heat, the area of the bath, and the change in the cin the working space. Heat balances ar for various thermal and oxygen regimes	omposition of combustion		
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Card 2/2			ł

SOV-157-58-8-16508

Translation from Referationry zhurnal Metallargina 1968 No. 5, p.39 (USSR)

AUTHORS Glinkov, M.A., Demin, G.i.

Card 1/3

TITLE Recirculating heat Steel Smelting Furnaces (Rets.rkulvatsionnive stateplayil nyve pechi)

PERIODICAL V sb. Primenen-ve kisleroda v metallargii, Moscow, Metallurgizdat, 1957 pp. 186-216

ABSTRACT Recirculating-heat turnaces (RF) are classified as a third type of steel smelting fornaces characterized by bilateral heating of the hearth (H); unlike open-hearth firnaces. The process of heating is continuous the supply of heat to the H is uninterrupted) which makes it possible to utilize the principle of heat recovery (analogous to the method employed in direct-current furnaces) rather than regeneration, as is typical of open-hearth furnaces. The RF may operate with hot or cold blowing. They may operate on nonenriched air alone, provided the latter has been heated to a high temperature—because complete combustion of fuel in the H of an RF requires considerably smaller amounts of excess air than in the case of direct current or

open hearth turns es (1.1 portead of 1.5) consequently, the

SOV/137-58-8-16508

Recirculating-heat Steel Smelting Formaces

temperature effect of air which had been preheated to a temperature of 800°C in an RF is equivalent to the effect of air preheated to 1100° in an open-hearth furnace. The authors present data of an investigation of a 10ton fuel-oil operated RF which had been placed into operation in 1952 at the Novo-Tul'skiy metallurgical plant and which operated without heated-air blowing until 1955, at which point it was equipped with ribular fireclay tubes) recuperators. Prior to 1955, the RF operated on air enriched with  $70\text{--}80\text{\,}^{p}_{\eta}$ of O2 at a pressure of approximately 2 at. Hot or from the recuperators equipped with end-mounted tuveres with nozzles, passes into the H through short uptakes which are inclined at a 100 angle. Since the volume of the checkered brick-work of the recuperator constitutes 70% of the required volume, it was found possible to heat the air in amounts only up to 3000-3500 nm<sup>3</sup>/hr. Expressed in millions of kealthr, the thermal loading of the furnace constitutes 8.5-9.0 during the charging-fusion period, and 1.0-4.5 during the finishing stages. As a result of the investigation it was found that the RF's are capable of smelting soft from (of the Arinco type) steels Nrs 2 and 3. carbon steels Nrs 30, 40, 45, and with particular ease, low-carbon types of steel, because the mean rate of combustion of C amounts to 2-4%/hr. The smelting time varied between 1.98 and 2.82 hrs. the consumption of conventional fuel fluctuated from 965 during smelting on completely liquefied Card 2/3

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## CIA-RDP86-00513R000515410006-9

SOV/137-58-7-14369

· Translation from: Referationyy zhurnal, Metallurgiya, 175t, Nr 7, p 60 (USSR)

AUTHORS: Glinkov, M.A., Ivanov, N.I.

TITLE A Recirculation Method of Oxygen Use in Large Open Hearths

(Retsirkulyatsionnyv metod primeneniya kisloroda v bol'-

shegruznykh martenovskikh pechakh)

PERIODICAL. V sb. Primenemye kisloroda v metallurgii. Moscow,

Metallurgizdat, 1957 pp 255-284

ABSTRACT: An investigation is made of the operation of a 185-t open-

hearth furnace (OH) with O2 employed by a recirculation method (RM) consisting of supplementary heating of the OH at various periods during the heat by fuel burnt in a blast highly enriched by O2 (as much as 80-100%), the fuel and the blow being delivered to the melting chamber of the OH through both checker ports simultaneously. All other conditions being equal, heating from both sides makes it possible to increase the total heat intake of the bath by 19-20% while a high level of enrichment of the blast by oxygen makes for a sharp reduction in thermal load on the outgoing side of the furnace. Thus, when

thermal load on the outgoing side of the larger land, the blow is enriched 40%, and the thermal load at the valve is

SOV/137-58-7-14369

- A Recirculation Method of Oxygen Use in Large Open Hearths
- 35.106 kcal/hr. 15.106 kcal/hr are emitted from the melting chamber, but with 80% O<sub>2</sub> this figure is  $9\cdot10^{\circ}$  kcal/hr, and with pure O<sub>2</sub> it is only  $7\cdot10^{\circ}$ kcal/hr, i.e., almost as much as is rejected to the stack when the furnace is operated by standard open-hearth practice (SOP). The use of high-calorie fuel makes it possible in turn to reduce the quantity of combustion products per 1000 kcal of heat input to the furnace. Investigation has established that at identical thermal load on the valve, the use of RM only during the melting period provides an increase in OH output rate of 10-15 t/hr, i.e., 30-50% higher than the rate of output of this same furnace when worked by (SOP). The rate of melting of the charge in this case exceeds that by the SOP by 45-50%. When the RM is used during the charging, heating, and melting periods, the smelting rate may attain 96.2 t/hr, while the length of the heat is cut to 3.5 hours instead of 5 hours when the furnace is operated with the RM during the melting period only. The unit consumption of conventional fuel is reduced from 129 to 95.11 kg/t when the RM is used during the melting period only, and to 81.6 kg/t when the RM is used during the periods of charging, heating, and melting. The consumption of O2 per ton of steel under these conditions rises from 50 0 to nb.81 and  $129.1~\mathrm{m}^3$ , respectively. When the furnace is operated by the RM, no need exists to change the charge in the direction of greater or smaller amounts of ore than is used in SOP. Card 2/3

SOV, 137-55-7-14369

N.I.

A Recirculation Method of Oxygen Use in Large Open Hearths

The mean rates of carbon burn-off during the inclining period were (in % per hour) 1.2-2.2, while the maximum was 3-3.4 and the rate during the working period was 0.83-1.04. An Fe balance compiled for all the experimental heats shows that operation of the turnace by the RM during the melting period only leads to a loss of 0.3-3% Fe by burning winde use of the RM during the charging, heating, and melting periods increases this loss to 1.3-4.8%. An increase in the liquid-pig-iron contents of the charge from to 70% to 90--100%does not affect the hourly output rate of the OH, the unit consumption of fuel and of O2 as reported above, but makes it possible to attain an Fe pick-up of 3.7-6.1%. The temperature of the combustion products in the uptakes is no higher than with the SOP, the temperature of the uptake walls being 1080-1700°C. The temperature of the gas checkers dropped curing the period of use of the RM (as combustion products were not passed through them), and the temperature of the air checkers fluctuated from 1200 to 1350°. The temperature of the roof and the air checkers is easily regulated by changing the fuel and O2 flow.

1. Open hearth furnaces--Performance ( ) waste-Chemnal effice.

Card 3/3

DANIXHELKA, A., doktor, inzh.: MIKHAYLOV, O.A., kand. tekun. mauk; GONCHARENKO, N.I.; KLIMASENKO, L.S.: OYKS, G.K., prof., doktor tekhn. nauk; SKMENENKO, P.P.; MORCZOV, A.N., prof., doktor tekhn. nauk; GLINKOV, M.A., prof., doktor teknn. nauk; KAZANTSHV, I.G., prof., doktor tekhn. nauk; KOCHO, V.S., prof., doktor tekhn. nauk; ENEKESH, Sh., kard. tokhr. rauk; MOROZENSKIY, L.I., kand. tekhn. nauk; GURSKIY, G.V.; SPHRANSKIY, V.J.; NOVIK, L.N., kand. tekhn. nauk, starshay muchnyy setrudnik; SHNEYEROV, Ya.A., kand. tekhn.

ELINK Y MA

Discussions. Biul. TSNIICHM nc.13/19:17-35 17. (MIRA 11:4)

nauk; PAPUSH, A.C., kond. tokhi. takhi; MAZOV, V.F., SAMARIN, A.M.

1. Glavnyy staleplay!! shohik Minisherstva medallurgicheskoy promyshlennosti i rudnikov Chekhosi ovahskov respubliki (for Danikhelka). 2. Direktor TSantrai ingo imatifoda informatsii chernoy metallurgii (fer Mikhayler). 3. Direktor Ukrainskogo instituta metallov (for Goncharenke), 4. Glarnyy staleplavil shehik Kuznetskogo metallurgicheskogo kombinata (for Klimasenko), 5. Zaveduyushchiy kafedroy metaliurgii etali Moskovskego instituta stali (for Oyks). 6. Zameshivel' glavnogo inzhenera zavoda im. Serova (for Semenonko). . Zave inyushchiy kafedroy metallurgil stali Chelyabinskogo policakhalchesk.g. instituta (for Morczer), 8. Zaveduyushchiy kafedroy metaliungimheskikh pechey Noskovskogo instituta stali (for Glinkey). 3. Saveduyashehiy kafedroy metallurgii stali Zhdanovskogo metallurgicheskogo instituta (for Kamantsev), 10. Zaveduyushchiy kafedroy meballungit stali Eiyerskogo politekhnicheskogo instituta (for Koche). (Continued on next card)

DANIKHELKA, A.-- (continue) Card 2. 11. Nachal nik tekhnicheskeg teksala Minteserewa chernoy metallurgii Vengerskoy Marodney Respubliki (for Raekesh). 12. Zamestitel' direktora Novetul'akege manallurgiche sloge zavoda (for Gurskiy). 13. Nacha. rik teknnicheskog, obiela zavoda "Dneprospetsstal' (for Speransk's). 24. Inabitus metallurgii im. Baykova AN SSSR (for Nevik). 15. Nachai'i'k staleplavil'noy laboratorii Ukrainskogo institu a metalita (for Saneyeman), 15. Nachal'nik laboratorii pe napraryvney razlinka shali Zhdanovskoge filiala TSentral nege maucha - dasiedcrahelisk go instituta Ministerstva stroitelincy promyshiences: (for Papush). 1. Rachalinik martenovskogo tsekha zavola "Zaperoshabali" (fer Manos). 18, Zemestitel' direktora Institula merallurgi: in. Bayk na AN SSSR, chlenkorrespondent AN SSSR (for Samaria). (Sheer - Mahallurgy)

137-58-6-11703

Translation from Referativnyy zhurnal, Metallurgiya, 1958, Nr 6, p 70 (USSR)

**AUTHORS** Glinkov, M.A., Mitkalinnyy, V.I.

TITLE: The Thermal Performance of an Open-hearth Furnace Operat-

ing by the Scrap Process (Teplovaya rabota martenovskoy pechi

pri skrap-protsesse)

PERIODICAL. Sb. Mosk, in-t stall, 1957, Vol 37, pp 22-32

A description of the results of 300 experimental heats in a ABSTRACT

70-t furnace at the "Hammer and Sickle" Works, with delivery of O2 into the heavy-oil jet flame, are described. O2 enrichment of the blow was 25-35%. Changes occurring in the temperature of the roof and flame in the course of a heat, at various rates of O2 flow, are examined. The temperature of the roof during the charging period varied in accordance with the duration thereof from 1400 to 1050°C, attaining a minimum at the end of the charging period. During the melt-down and working period, the temperature of silica-brick roofs attained 1650°, while basic roofs reached 1780°. The temperature of the flame!

measured by an optical pyrometer, was  $1800^{
m 0}$  during the charging period and 18500 at the end of the melt-down in heats without

Card 1/2

The Thermal Performance (cont.)

O2. but with a 25% enrichment of the blow, the thine temperature rose to 1930° during charging, while 52% enrichment brought it to 1990°.

G.G.

1. then hearth thermore solitems transfer properties of a possible of annexos—lent results.

Card 2/2

157-58-0-11070

ranslation from Rei sat. ... she wal. Me storm in 1986. Nr 6. p 65 (USSR)

AU THORS Glinkov, M.A. Vavilov, N.S.

Heat Exchange in the Space Above the Bath of a Recirculation-TITLE type Steel-foundry Furnace (Teploobmer v postranstve nad van-

nov retsirkulvatsionnov staleplavil nov pechi)

PERIODICAL Sb. Mosk, in-t stalt, 1957 Vol 37, pp 305-329

ABSTRACT

A presentation of the results of an investigation of heat exchange in a 10-ton steel-foundry recirculation-type furnace (RF) having 9.6 m<sup>2</sup> hearth area and simultaneous two-sided heavy-oil feed at 2-3 atm excess pressure, sprayed by compressed air at 4-5 atm excess pressure. The heat flux, measured by a heat gage of special design rises gradually during the heat and then drops at the end of the working period. The heat flow over the bath. QB, varies across the width of the furnace from one melt to the next from between 800-1,100 thousand I cal/mehr at the front wall to 1200-1450 rearwards of the middle of the furnace, and drops to 1050-1150 thousand kcal/m2hr at the rear wall. The take up of these by the bath,  $\Delta Q_{\rm c}$  varies in similar asshion, attacking by velocity at 100 thousand keal my hr.  $Q_{\rm B}$  varies insignificantly along the beautiful of the

Card 1 2

137-58-6-11076

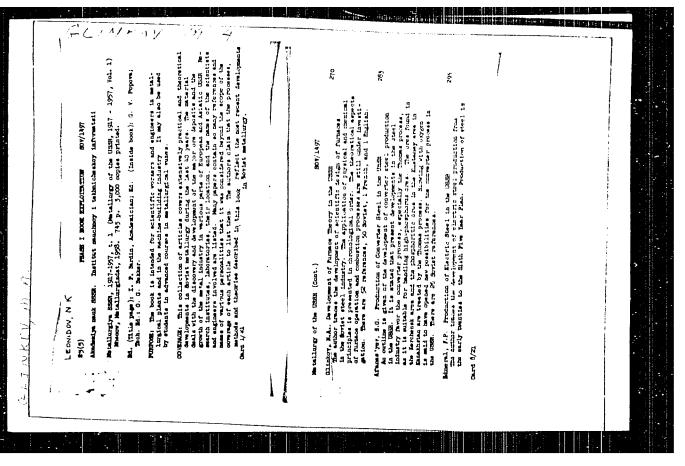
Heat Exchange in the Space (cont.)

formace, and  $\Delta Q$  attains a maximum in the center of the fernace. The heat flux is distributed across the area of the furnace considerably more unsformly than in an open hearth, since the two-sided fuel feed makes it possible to maintain identical thermal conditions in either half of the working space  $Q_Q$  varies dorn it a melt as to,lows through the height of the working space from 1100-1250 thousand keal/m²hr at a point 300 mm from the surface of the bath to 830-900 at a height of 1200-1300 mm. Curves are presented for the variation is calculated temperature and in black-body radiation of the gas at different and the least emissivity by radiation is  $1500 \cdot 2/60$  heal/m² of hr, while for an open earth furnace it does not exceed 1000 the bath surface is  $1700 \cdot 1800^{\circ}$ C. The temperature of the metal is the same as in an open-hearth furnace. In the RF the sheet idea is greater overheating. In the RF there is virtually is in a daring the heat when the bath is not undergoing vigorous agitation. The directed heat exchange plays a significant role.

i.G

Description of the control of the cont

Card 2:2



SOV/137-59-1-57

Translation from: Referativnyy zhurnal, Metailurgiya, 199. Nr 1, p 5 (USSR)

AUTHORS: Glinkov, M. A., Krivandin, V. A., Bugrova, B. A.

TITLE: Directed Flame Radiation With Uneven Temperature Distribution

(Napravlennaya radiatsiya plameni pri neravnomernom rasprodecemi

temperatur)

PERIODICAL: Naucha, dokl. vyssh. shkoly. Metallarjiya, 1758, Nr 1, 19 50-66

ABSTRACT: The investigation was carried out on a stand consisting of a shielded combustion chamber with three burners (of the concentric-tube type)

forming three parallel, vertical flame jets set so close together that they may be considered as layers of a single flame sheet. The temperature of each layer of the flame was measured by a bare 2t -

Pt/Rh thermocouple and the total radiation along the length of the flame was measured by a diaphragmed differential thermopile (Guconstantan). Gity gas with a heat value of \$300 - 6600 kcal/m<sup>3</sup> was burned. Data are adduced on the effect of the distribution of temperatures, thermal load, excess-air coefficient, enrichment of air

with O<sub>2</sub>, and carburation with pulverized coal throughout the thickness of the flame on its radiation. Changes in the layer closest to

Card 1/2

he flame jet. G.G.	

SOV 137-59-1-329

Translation from: Referativnyy zhurnal, Metallurgipa, 1989, 110...p 41 (USSR)

AUTHORS: Glinkov, M. A., Kosterin, V. V.

TITLE: An Investigation of the Thermal Performance of a Recirculating

Steel-smelting Furnace Designed by Prof. M. A. Glinkov Employing Geranne Recuperators (Issledovaniye teplovoy raboty retsirkuivatsionnov staleplavil'nov pech: sistemy prof. M. A. Glinkova s

keramicheskimi rekuperatorami)

PERIODICAL: Izv. vyssh. uchebn. zavedeniy. Ci ernaya metallurgiya. 1958, Nr

1, pp 94-111

ABSTRACT: The 10-ton recirculating steel-smelting furnace (RSF) is equipped

with two recuperators having a total area of 345 m<sup>2</sup>. The turnace is fired with fuel oil, the degree of enrichment of air with O2 being varied from 45 to 21% in the course of a heat. Compared with corresponding factors in open-hearth furnaces operated without  $O_2$ , the production efficiency of the RSF s is greater. The consumption of

O2 amounted at times to 270 kg/ton. An increase in the degree of oxidation of the slags constituted the major technological difficulty

of the process; however, by means of appropriate selection of an Card 1/2

SOV,137-59-1-324

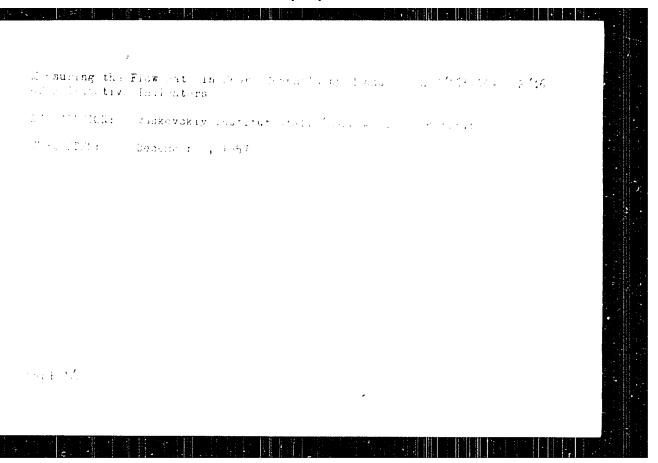
An Investigation of the Thermal Performance of a Recirculating (cont.)

optimal oxygen-air ratio, this condition could be reduced to 14-18% EFe. The degree of oxidation of the metal was even lower in this process than in the case of standard open-hearth furnaces. A reduction in O2 consumption is not justified economically since the cost of O2 constitutes only a comparatively small fraction of the cost of a ton of steel. Owing to the insufficient length of the hearth, the advantages of two-sided heating of molten metal could not be fully evaluated, since the meeting of the flames in the center of the furnace produces a vigorous stream of gases resulting in the disintegration of the central portion of the crown of the furnace. The roof of the furnace could withstand a maximum of 475 smeltings. Because of the vigorous recirculation occurring within the hearth, the amount of smelting dust carried into the recuperators was considerably reduced thy 5-8 times), which greatly improved the operational performance of the latter.

М. М.

Card 2/2

. Figure:	Glinkev. 1. A., Jameison, 1. A.	107 (163-58-2-22/46
m m		skoresti potuka v
"That I Do CAL:	Naugheupe Fillalv vpssnev shkolj. Netallurgipa, 1958. Pr., pp. 161-111 (USDE)	
ABSTRAUT:	A is took for recombing the mean $\ell$ , then is by means of radioactive in $\frac{17}{2}$ was used as $\chi$ -radioactive independent	Escators who worked out.
Jarl 172	water soluble compount. An equal list notive indicator introduced along to the channel was achieved, and the disof compustible products in the lower enamed was a termin 1. The flow rate butto in the virtual direction of the 4 - 0.0 m/secondithe probable are ingrested ask a possible the disterning the flow in the virtual direction. There are 5 flow in the virtual direction.	stribution of the radica- to vortical direction of laterbution of the flow recast scatten of the to of the combustible pro- tic channel amounts to r of 8.7%. The method institut of the boundary



3-58-3-4/32

AUTHOR:

Glinkov, M.A., Professor, Dector of Technical Sciences

TITLE:

New Progressive Features in Teaching General Scientific Subjects (Novoye, progressivelye - v prepodavaniye obshchenauchnykh distsiplin) Must We Expand Only the Beneral Scientific Cycle? (Nuzhno-li rassairya: tolik, Scanchenauchnyy tsikl?)

PERIODICAL:

Vestnik Vysshey Snkoly, 1995. Ar 3, pp 11 + 24 (USSR)

ABSTRACT:

The author disagrees with the following extreme view-points regarding higher school teaching methods: that apecial technological subjects should be reduced to a minimum while the general scientific and general engineering subjects should be increased; and that training in the student specialties should be increased. The explains how extremes can be reconciled and concludes that in order to improve teaching plans and programs there must be an increase in tasic subjects and a transfer of the "theoretical fundamentals" (common to various specialties) from the special subject to the basic subject category. General scientific subjects should be increased only when badly needed, as in mathematics. The author admits that the better the students master formal mathematics, the easier they will comprehend engineering.

Card 1/2

New Progressive Features in Teaching General Scientific Subjects. Must We Expand Only the General Scientific Cycle?

However, if the basic subjects are not sufficiently developed the prevalence of general scientific subjects in the curriculum will not yield the desired results. He emphasizes the importance of increasing the level of training in the theoretical fundamentals of technology. There is one Seviet reference.

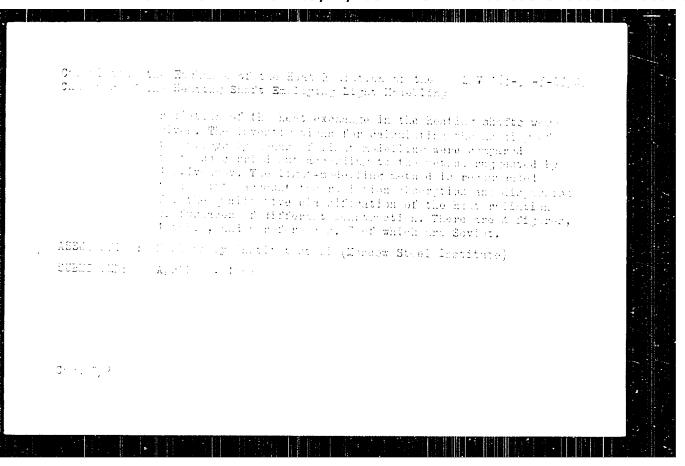
ASSOCIATION: Moskovskiy institut stali imeni I.V. Stalina (Moscow Institute

of Steel imeni I.V Stalin)

AVAILABLE: Library of Congress

Card 2/2

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PIULE:	Oblimitation the Employ of the Heat Religation of the Thankers of the Employing Limit Unfelling (in order inclining to 1) burns various a growth line to the contract of the way of the property of the contract of the contra	
likid don <b>l</b> :	Herein presidently vycaner and in Metallurgiya, in , , Droper to a fire (mone)	
aldık. Dir	The stant-smalling is to the complexed for the stant to so of the limit refrection in infacting, formmers, A set of expertus for light modelling was constructed. The cones of the eranes is of heat radiations in the reliability expression and stant of y insthermal names. The resulting expression have $f$ was determined. The angular coefficients $\phi_{fg}$	
Jacob S	on the five apper parts of the chemic by the following equation: $ \psi_{\rm Va} = \frac{{}^{2F}_{\rm p} \phi_{\rm ca} + {}^{2F}_{\rm p} \phi_{\rm ca} + {}^{2F}_{\rm i} V_{\rm de}}{\sum_{\rm F} e^{i \phi_{\rm ca}}}, \   {\rm the}  e^{i \phi_{\rm ca}} = \frac{{}^{2F}_{\rm i} V_{\rm de}}{\sum_{\rm F} e^{i \phi_{\rm ca}}}. \label{eq:psi} $ used including all of $\phi_{\rm ca}$ . Examples for the	rame war $\psi_{i,0}$ and be



GLINZOV, M.A., doktor tehhn.mank, oror.; TY.Abiak, V.E., kand.tekhn.mank

New design of recuperative scaking pits. Izv. vys. ucheb. zav.; chern. met. nc.7167-89 J1 158.

(Furnaces, Heaving)

(Furnaces, Heaving)

CLINKOV, Mark Alekaeyevich; SUKHKIN, 1.N., red.; VAYNSHTEIN, Te.B., tekhn.red.

[Principles of the general theory of the thernal operation of furnaces] Osnovy obshchei teorii teplovoi raboty pechei.

Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po chernoi i tavetnoi metallurgii, 1959. 416 p.

(Thermodynamics) (Furnaces)

307/133-59-1-6/23 AUTHORS: Glinkov, M.A., Doctor of Technical Sciences and

Demin, G.I., Candidate of Technical Sciences

"Recirculation-type Recuperative Steelmaking Furnace TITLE:

(Retsirkulyatsionnaya rekuperativnaya staleplavil naya

pech')

PERIODICAL: Stal', 1959, Nr 1, pp 24 - 31 (USSR)

ABSTRACT: The design and operation of a recirculation-type

recuperative steelmaking furnace of 10 tons capacity is described. A recirculation furnace differs from an

open-hearth furnace in that it operates with both burners simultaneously. Impact of two streams of gases in the centre of the furnace causes their intensive recirculation which sharply decreases the amount of dust in the waste The design and dimensions of the furnace are shown in Figures 1, 2 and 3. In appearance the furnace is similar to an open-hearth furnace of the same capacity. Fuel oil is simultaneously supplied to both burners and the gaseous combustion products pass from the working

volume through both parts along vertical flues into slag pockets and then to recuperators, waste was flies and the

Each recuperator was of 34.5 m<sup>3</sup> in volume and chimney. Card1/4

36 7/133-59-1-6/23

Recirculation-type Recuperative Steelmaking Furnace

240 m<sup>2</sup> in heating surface area. The stream of burning hot oil is used as an injector for air from the recuperator which decreases air losses. Proportioning of the supply of oil, oxygen and air is done separately for each flame. Recuperators are protected from overheating by an automatic supply of air to the evertube space in order to decrease the waste-gas temperature. Unfortunately, the recuperators were made of an insufficient volume (70% of the necessary) and their cleaning during operation was impossible due to insufficient cross-section of flues between recuperators and slag pockets. For a normal prolonged operation of recuperators only 1-2 rows of tubes from a high refractory material are necessary, the remaining tubes could be made from chamotte. Operation of the recuperator will be described in a separate paper. The durability of recuperator, first campaign - 1 480 heats, second 1 082. Air and recuperators temperature are shown in Figure 4. Smelting of MSt3 killed steel in the furnace is described in some detail. Average technological indices of the heats are shown in the table; the dependence of the consumption of fuel and oxygen during charging and melting and of the duration of this period on the duration of

Card2/4

BUV/135-59-1-6/23

Recirculation-type Recuperative Steelmaking Furnace

a heat in Figure 6. It is claimed that for the first time in steelmaking practice, the possibility of operation under industrial conditions of a recuperative furnace with ceramic recuperators capable of pre-heating air to 1 000 °C was demonstrated. The proving series of heats (68 heats) under conditions near to the normal operating conditions had the following mean operating indices (MSt.3 steel for a continuous casting machine): duration of one heat 2 hours 43 minutes, consumption of oil 178 kg/ton, consumption of oxygen 170 m<sup>3</sup>/ton of liquid steel; the yield of liquid steel 91-935. The furnace is suitable for the production of killed steel MSt. 3 (for a continuous casting machine) in quality equal to that produced in a basic open-hearth furnace. As the velocity of decarburisation can be varied within a wide range (from 2.0 to 0.36% hr), the furnace is particularly suitable for smelting low-carbon and specially soft steels (the sum of admixtures C + Mn + S + P < 0.0750). High productivity of the recirculation furnace led to a considerable economy

in respect of the constant expenses and the cost of oxygen

charging is shown in Figure 5 and main characteristics of

Card3/4 is more than covered by fuel economy. The overall cost of

SCY/133-83-1-6/23

Recirculation-type Recuperative Steelmaking Furnace

steel does not exceed that in the normal open-hearth furnaces. Under operating conditions of the experimental furnace it was difficult to establish the economic efficiency of recirculating recuperative furnaces. It would be advantageous to build a 50-100 ton furnace capable of operating with oil and a gas of a high calorific value. There are 6 figures, I table and 4 references, I of which is German, and 3 Soviet.

ASSOCIATION: Moskovskiy institut stali (Moscow Institute of Steel)

Card 4/4

BAT 19-3-19-3-16-146 - 18(3)

Glinkov, M. A., Serokhvostov, A. L. AUTHORS:

A Model Investigation of the Processes of Scitling and TITLE:

Carrying-out of Dust in Steel-melting Furnacen (Isslelovania

na stende protsessov osedanija i vymo m tyli v staleplavilinyk.

pechakh)

PERIODICAL: Nauchnyye toklady vyssher shkoly. Metallur dys. 1950, Nr 2,

pp 84-39 (USSR)

ABSTRACT:

The model of a steel-melting furnace was aris of plexiglass on a scale of ': is (Fig. 1). The air cup, ly working as a model of the gas circulation could be blown in, as in the original, as a direct current with uniliteral and double return flow. To imitate the course-grained dust, water was introluced into the tank of the nodel, and air was blown in by a series of tubes under the water surface. The irops carried away were collected in 12 measuring points (Fig 2) by means of rolls of filter paper. For the finer dust frace tion the metal level of the tent was respected by a metal foil with 25 specings by which twormsately. It is blown and shear was absorbed in the assument a provision of perfect super. The course of perfect super. The course of the superstance of the course of the course

der1 1/2

A Model Investigation of the Perseases of Settler and Desper For Settler and Desper For the State of Settler and Desper For the State of Settler and Desper For the Desper For the Settler and Desper For the Desper

different conditions of structuation. In Direct Levels of a within with a unfiltered return flow, the results of her cuttling item up software the files. In the createst the fact that within actions to the return flow the made us of dust walls, with the lettered in the lower the made us of dust settling lies in the weeting point of the own flaves. The settling of the double hat fraction or since one irregular-ly than that of the fine bust. By reversing the flave, the dust mettling loss set a note hat it because it received but of the furnace. The maximum lust only fine had it corries but of the furnace. The maximum lust only flave the function of made is gradually lireat blowing the minimum in wase of a buble room flow. There are " liveres.

ASSOCIATION: Cochovskiy institut stali ollowew Steel In troops

SUBMITTED: Tely 11, 1956

Card 2/2

507/153-59-6-37/41

Glinkov, M.A., Doctor of Technical Sciences and AUTHORS:

Glinkov, G.M., Candidate of Technical Sciences

Some Thermotechnical Problems of large Capacity Open TITLE:

Hearth Furnaces (Nekotoryye voprosy teplotekhniki

bol'shegruznykh martenovskikh pechey)

PERIODICAL: Stal', 1959, Nr 6, pp 565-572 (USSR)

Possibilities of increasing the productivity of open ABSTRACT:

hearth furnaces per unit of their capacity is discussed. It is considered that the higher the furnace capacity, the higher the quality of the solid charge should be. This would permit retaining the level of irradiation factor on decreasing of the ratio of the surface area of the bath to the furnace capacity (S/T). The higher the furnace capacity the higher the quality of the liquid iron or semiproduct should be as an increase in the thickness of the slag

layer unavoidably deteriorates conditions of heat transfer. Sufficiently advantageous heat exchange conditions inside the solid charge and liquid bath can

be obtained on retaining S/T constant with increasing

Card 1/4

Some Thermotechnical Problems of Large Capacity Open Hearth Furnaces

furnace capacity. In order to obtain this a different type of steelmaking furnace is necessary with a working space up to 10 - 12 m wide, nanging roof and two-sided charging (with a corresponding change in the distribution of equipment in the shop). The higher is the Laying down property of the Clame and its luminosity at the end of the smulting space the lower is non-uniformity in the neat exchange along the length of the furnace. Therefore on increasing the capacity of the furnaces, it is necessary to increase correspondingly the velocity of the ruel stream in order to obtain the required lavance down capacity of the flame. In order to improve the flame luminosity at the end of the smelting space, it is necessary to use as a fuel or a carburising agent, heavy liquid fuels with a large ratio of C/H, on the decomposition of which complex hydrocarbon complexes are formed, securing stable luminosity of the flame.

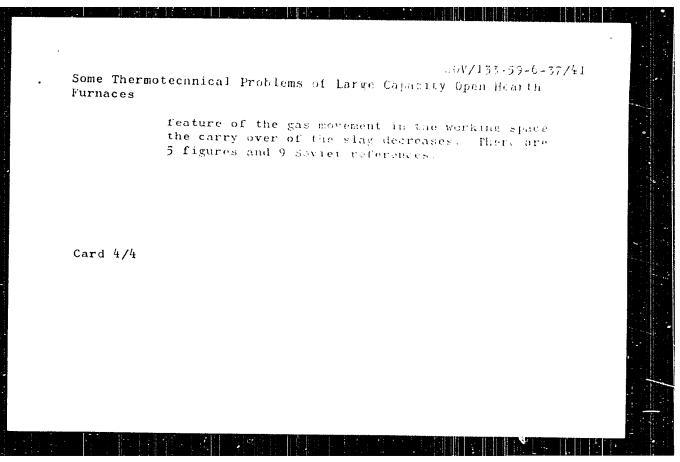
Card 2/4

SOV/133-59-6-37/41

Some Thermotechnical Problems of Large Capacity Open Hearth Furnaces

A truly uniform heating of the baths of large turnaces can be obtained with a two-sided supply of fuel into the working space i.e. with simultaneous operation of two dog houses. On transferring an open hearth furnace on firing with oil or a cold gas of a high calorific value this problem can be solved easity by using three-channel dog houses (Fig 5). In each dog house either two side-channels or one central channel operates alternatively. The remaining three channels serve as waste gas flues to pass the waste cas to the regenerators - simultaneously through both dog houses. The movement of the gas in the working space will be mixed (counter-current and recirculation), As each dog house supplies through tuyeres the same amount of fuel, the heating conditions of both halves of the working space should be the same. All four regenerators are preheating air, the reversing system will be little changed. The separation or slag in slag pockets will be facilitated as que to the peculiar

Card 3/4



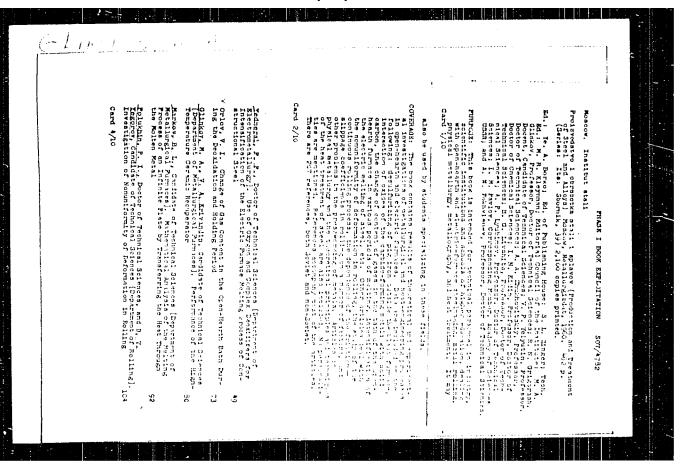
GLINKOV, M.A., prof., dokt.tekhn.nauk

Readers' response to A.D.Kliuchnikov's article "Method for a comparative evaluation of open-hearth furnace parts." Izv. vys.ucheb.zav.; chern.met. 2 no.8:179-181 kg '59.

(MIRA 13:4)

1. Moskovskiy institut stali.

(Open-hearth furnaces) (Kliuchnikov, A.D.)



8/146 0 15 0 17/02/7/23/XX

AUTHORS:

Clinkov, M. A.; Filim no . Vu. P.; Keivanein, V. A.

TITLT:

Thermal decomposition of gas containing methane in an exidining

medi im

PelaTODICAL:

Izvestiya vysshikh uchobavkh zavedeniy. Geermaya metalicingiya,

ns. 7, 1360, 193 - 197

TEXT: A liminous gas flame radiates more heat them a haddminon, can and its luminosity is determined by the presence of carron-black particles. The thermal der mposition reaction of methane without air account has been studied (Ref. 1 F Fischer, reaction of methane without air account has been studied see English sage publications), but in diffusion burning a high quantity of small volumes have a varying exygen content, and two processes project at the same time - exidation and thermal decomposition of methane. The laws of these processes have been studied at the Mossow Steel Institute. The test installation (Figure 1) condisted at he ting home (4) and cooling none (7) for the rad-air mixture, in electristable projectation vessel (b) and fritters (3). The gas composition was: 62.6 % H<sub>4</sub>, 0.3 for H<sub>5</sub>; 2.2 cm, 1.7 % (3) and follow; 1.5 % 0.2 % Call 1/2

### "APPROVED FOR RELEASE: 09/24/2001

CIA-RDP86-00513R000515410006-9

Triencal composition of g. S ....

8/1+30 0 0 0/00 0 26/025/00 A16./ M.S.

and the of book of the more spring in a costs (1) the read so the si In respect of the tip. The quantities of solds exception, the relative quantities of the property and the composite x and x and y and y are y before yn measurement if the expections. The temperatures in the reaction zero were 1, were 19100; 1,200; 1,200 r. 1 1,4000. At 1,0000 the gas in the resetter z . - col dibeing the crygon, which proved that exidation was even as 1,00000 one to antent is the gray increasing with the of a to to meanwhire, and the Copy content despise which is one to the COg reduction, received with CO termston and with continued a increasing quantities of goody earbon. More CCp and less CO formed when the air feed was increased. The reaction products in the precipitation vescel wire a cicum varying in euror from yellowish-white to black, and the precipitated frakes runity a strong maphtaline smell were a mixture of soot and rydromarken compounds. Benzene, naphtalene, anthracene and other compounds were extracted with petroleum ether, and asphaltenes with benzene. Figure 3 presents the coloulation results showing that the content of methano decreases with a rine in temperature, and the mydrogen contact increase; with an increase in air feel, stantas, as: 1) verty carbon forms in combined exidation and thermal decomposition of motories are to thermal decomposition of nonexidized part of methens, with the figuration of com-

Card 2/5

S/148/6C/000/007/023/023/XX A161/A033

Thermal decomposition of gas....

rlex hydrocarbon molecules as transient compounds. 2) No strong effect of exidation on the composition of the forming products was stated. A reduction of CO<sub>2</sub> t CO on account of carbon forming during the decomposition was observed, but no effect of this process on the quantity of the forming products was revealed. 3) The dilution of gas with the formed exidation products results in some shift of the methane decomposition reaction temperature into higher temperature ranges. There are 4 figures and 3 non-Soviet-bloc references; The references to English language publications read as follows: P. V. Wheelera, W. L. Wood, Fuel. 1928, 7, 535; 1930, 9, 567; K. Koboyaschi, K. Jamamoto, Journ. Chem. Ind. Japan, 1935, 38, 550; 1934, 37, 785.

ASSOCIATION: Moskovskiy institut stali (Moscow Steel Institute)

SUBMITTED: Nov. 30, 1959 i

Card 3/5

s/148/60/000/009/025/025 A161/A030

AUTHORS:

Glinkov, M.A., and Taoy Yen Sir

TITLE:

An experimental check of calculation methods for heating

ingots in soaking pits

Card 1/2

PERIODICAL: livestiya vyjehikh uchebnykh zavedeniy Chernaya metallurgiya,

no 4, 1960, 191-198

The various existing theoretical calculation methods for heating metal in soaking pits are basel on different assumptions, and the calculation results are not always the same for the same cases. An experimental investigation has been carried out for a sheck. A scale model (1:15) of a soaking pit at the 'Azovetal" works was built with two top burners. Ingots were heated with thermocouples imitating the real heating process; the gas temperature was also measured with a sucking thermocouple ("otsasyvayushchaya termopara') in several spcts in the work space and the mean temperature was calculated. In the ingots, the temperature was measured in the center of three portions with equal mass, and on the faces, and the mean was calculated. The obtained curves were compared with the curves obtained by

### "APPROVED FOR RELEASE: 09/24/2001 CIA-R

CIA-RDP86-00513R000515410006-9

An experimental oberk of calculation

S/148/60/000/009/025/025 A161/A030

calculation per the methods: Fur'ye-Greber, I.D.Semikin, G.F. Ivantsov; the method suggested by N.Yu. Tayts, D.V. Budrin, and V.N. Sokolov. Abstracter's note: Details of the listed calculation methods are not given. The conclusions are the following: 1) The calculation method by Fur'ye-Greber based on the assumption of constant heat release and heat conduction coefficients gave a listorted picture; splitting of the heating process into intervals does not ensure sufficient accuracy. 2) The graphical method of J.P.Ivantsov, used with a high number of stages gives results more or less near the real. 3) Determination of total soaking time by D.V.Budrin's method is near the real. 4) The calculation method as suggested by V.N. Sokolov (Ref. 8: Raschety nagreva metalla (Metal Heating Calculations) Mashgin, 1955) gives the best results, provided the temperature of the soaking pit changes little. This method is recommended for practical use. There are 4 figures and 8 Soviet bloometers.

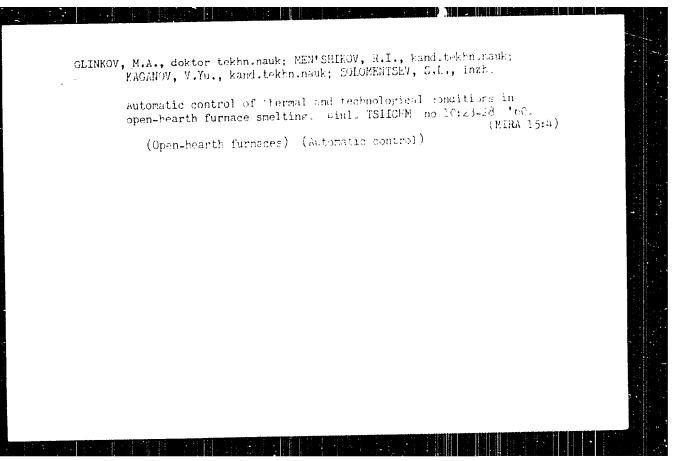
ASSOCIATION: Hook wakty institut at ili (Moserw Steel Institute)

SUBMITTED

.1

12 April 1960

Card 2/2



GLINKOV, M.A.; FILIMONOV, Yu.P.; KRIVANDIN, V.A.

Flame emanation during the heating of methans containing gas.

Izv. vys. ucheb. zav.; chern. met. no. 11:149-155 '60.

(MIRA 13:12)

1. Moskovskiy institut stali.

(Methans--Combustion)

s 148/60/000 form 015 (020) 110 111

AUTHOR:

Allender, M. A.

TITLE:

The grablem of the open-hearth fains a productionty indices

(As a discussion)

PERIODICAL: In.e.tiya vysskikh uchelnykh navedenny. Chernaya sevallurgiya,

a. 12, 1960, 135 - 138

The old practice of rating the output of open hearth formates by the apelific productivity (ton/m² per day) has become obsolete in view of the fact that in relatively small formaces below 100-ton capacity the TEXT: ratio tornage hearth area varied little, from 1.4 to 1.65, but in the moiern 400 F00-th formabel it reaches 5.0 - 6.6. Best les this, the lown time in different at inforest plants and inity fuel furnaces, and the specific Productivity figures are lower for larger formaces in view of the known fact that the heat exchange conditions are unfavorable. The mather discussee several conjections that have been made by other authors up to now, and refere in particular to the "ton/ton of charge per year" index suggested by D. A. Smolyarank, N. I. Yefanov et al. (Ref. 1: Stal., 1050, no. 7, 601.

Cart 1 %

### "APPROVED FOR RELEASE: 09/24/2001

CIA-RDP86-00513R000515410006-9

S/144760/000 012 015/020 At61 A124

The problem of the open-nearth furnace. .

hearth or root has In their investigations the grosent state of the hearth or root has In their investigations the authors utilized an analyses rate (a to of sharge per hoar) (a.f. is M. A. Hinker, S. M. Glinkov, Stale, 1989, ...d., 568 - 572). The article invides a table rillactivating the specific of eight farms as at four Seviet plants. Magnitude Greaty wetall or, the skiy kembinat (MMK) (Magnitudes A. Matallargical Combine); Kennetake, setallargicheskey kembinat (KMK) Kommetake Mutallargical Combine); Nichter Tagillskiy metallargicheskey kembinat (KMK) (Mixhue and Cambine); Alchevskiy metallargicheskiy bavoi (AMZ) Alcolevsk Metallargical Combine); Alchevskiy metallargicheskiy bavoi (AMZ) Alcolevsk Metallargical Plant). The discussed suggestions include fireign practice (, or hear in calendar time), and a system of "correction factors" taking into a scant of root, seafficients would lead to abuse and complete confusion in rating the formate projectivity, but two others he accepts as being of importance, vis. the expect offect and, in some a so, the metal grade being smelter. The anthory cancilusions: 1) Projection in time unit per ton sapacity is a more indicative value unit, miles miles conditions than production per agains noter hearth area

Cart J

### "APPROVED FOR RELEASE: 09/24/2001

#### CIA-RDP86-00513R000515410006-9

The problem of the open-hearth furnise...

5/140/60/000/012/015/020 A161/A133

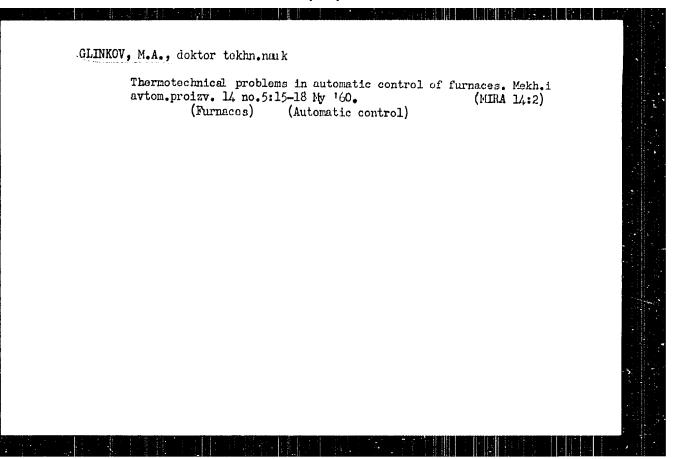
2) An index showing the heat work must be accepted, i.e. "hg/t-ha", or "ton/ton a day". 3) Comparison per calendar time is wrong for the heat work of a furnace since the shop conditions are not comparable. The conditions can be accounted for with the "extensivity faces". 4) The effect of the furnace heat work on the "extensivity factor" (the effect of the furnace life) exists, but it appears to be less marked than the millest of the maintenance organization and other factors that are main down then the may be disregarded. 5) Furnaces working with exygen or a coint a maces must be compared in separate groups. There is 1 table and 4 Soviet-bloc references.

ASSOCIATION: Moshovskiy institut stali (Mossow Steel Institute)

SUBLITITE: August 18, 1950

Емкость печи, т	200	200	250	250	400	400	400	500
Завод и печь	ммк-а	кмк-в	ммк-в	ммк-г	кмк-д	KWK-E	HTMK-	л.:.Z Амз- <b>з</b>
Площадь пода, ма	65,7	71.4	73.8	73,8	75,4	71.4	81.4	96.7

Card 3/5



AKS.L'RUD, L.G.; GLEMOV, M.A.; GLEGO MIN, V.M.; LLESHINS, A.Y.; EMERSEN, L.M.

Prospects for improvements in L.M. and m of heatlm and lamber eating furnaces. Stal' 20 no.6:562-567 Je '60. (EMA 14:2) (Annaces, Heatlm.)

(Annaces, Heatlm.)

GLIEKOV, M.A., doktor tekhn.nauk, prof.

Fifty vears of existence of the Scientific Technological Society of Ferrous Metallurgy. Stal' 20 no.11:961-962 M '60. (MIRAL):10)

1. Chlen TSentral'nogo pravleniya nauchno-tekhnicheskogo obsh-chestva chernoy metallurgii. (Iron-Metallurgy)

GLINKOV, M.A., prof., doktor tekhn.nauk, red.; KONDAKOV, V.V., prof., doktor tekhn.nauk, red.; KUDRIN, V.A., dotsent, kand.tekhn.nauk, red.; OYKS, G.N., prof., doktor tekhn.nauk, red.; YAYOYSKIY, V.I., prof., doktor tekhn.nauk, red.; BORKO, Ye.A., red.; GROMOV, N.D., red.izd-va; KARASEV, A.I., tekhn.red.

[New developments in the theory and practice of making openhearth steel] Novce v teorii i praktike preizwedstva nartenovskoi stali. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1961. 439 p.

1. Moscow. Institut stali. 2. Moskovskiy institut stali (for Glinkov, Kudrin, Oyks, Yavoyskiy).

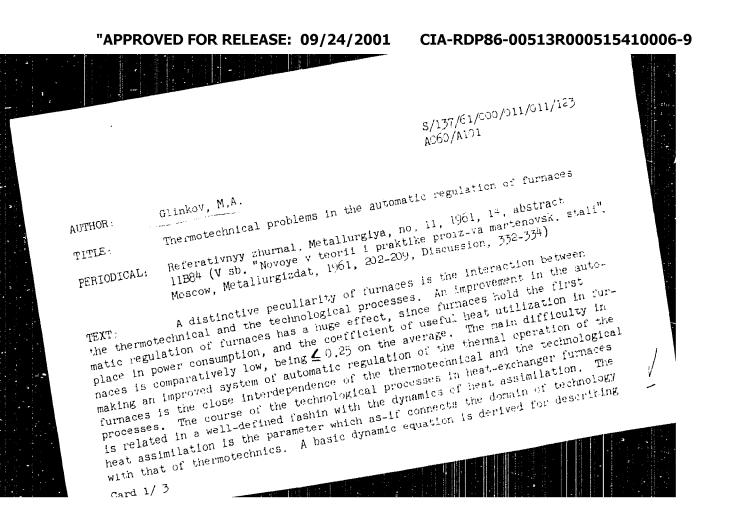
(Open-hearth process)

DIOMIDOVSKIY, Dmitriy Aleksandrovich, prof. icktor tekhn.nauk; GLINKOV,
M.A., prof., doktor tekhn.nauk, extensiont; MIKHAYLENKO, A.Ya.,
red.; ARKHANGEL'SKAYA, M.S., red.izd-va; DOBUZHINSKAYA, L.V.,
tekhn.red.

[Metallurgical furnaces in nonferrous metallurgy] Metallurgicheskie
pechi tsvetnoi metallurgii. Moskva, dos.nauchno-tekhn.izd-vo lit-ry
po chernoi i tsvetnoi metallurgii, 1961. 728 p.

(MIRA 14:6)

(Metallurgical furnaces)
(Nonferrous metals--Metallurgy)



Thermotechnical problems ...

S/137/61/000/011/011/123 A060/A101

the thermal operation of a furnace:  $Q_{\mathrm{TL}}$  (  $\mathcal{T}$  ) =  $\frac{1}{\eta_{\mathrm{UT}}(\tau)} \left[\Delta \dot{\mathbf{I}}(\tau) \cdot \mathbf{D}(\tau) + Q_{\mathrm{esc}}^{\mathrm{M}}(\tau)\right]$ 

-  $\mathcal{Q}_{\mathrm{M}}(\mathbb{T})$ ] where  $\mathcal{Q}_{\mathrm{TL}}$  is the thermal load of the fuel combustion, in kilocalories per hour;  $\eta$  UT is the coefficient of useful heat utilization of the furnace; D is the furnace productivity in kg/hr,  $\Delta$  listhe function characterizing the technologically required heat expenditure for the material undergoing the heat-treatment, taking account of the thermal effect of any reactions in the material, in kilocalories/kg;  $\mathcal{Q}_{\mathrm{esc}}^{\mathrm{M}}(\mathbb{T})$  is the function characterizing the chemical and physical heat of the escape products from the combustion of gaseous products of the technological processes, in kilocalories per hour;  $\mathcal{Q}_{\mathrm{M}}(\mathbb{T})$  is the function characterizing the behavior of the heat on account of the chemical and the physical heats of the gaseous products on the technological processes, in kilocalories/hour. Three principal methods of solving problems of the aritematic regulation of the thermal operation of furnaces are considered: the analytic, the semi-empirical, and the empirical. It is noted that the design of systems for automatic regulation of furnaces is most often based upon the physical approach to the thermotechnical problems of regulation. It is proposed that special attention

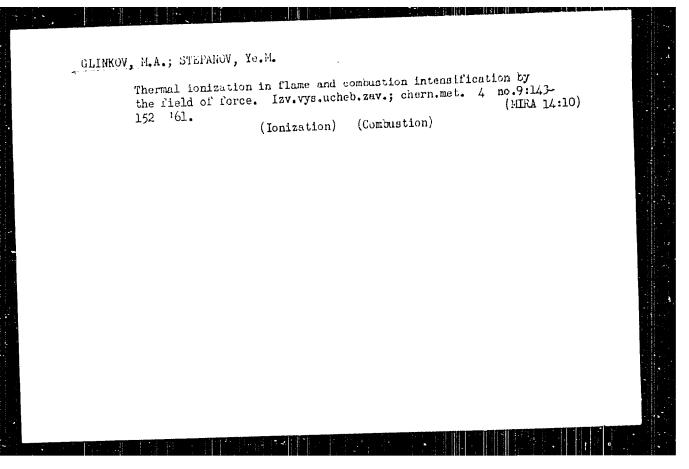
Card 2/3

Thermomeonnical problems	S/137/51/000/011/011/123 A/60/A101	
re paid to the elaboration of the analytic theo various furnaces as a basis for developing the regulation.	and a Control of the	
	: Folyak	
[Atstractor's note: Complete translation]		
		$\sqrt{}$
		-

GLINKOV, M.A.; FORTNOV, A.A.

Flame testing of chambers with a vortex flow of gases and a watercooled receiver in the center near the surface of the brickwork. Izv.
vys.ucheb.zav.; chern.met. 4 no.5:184-188 '61. (NIRA 14:6)

1. Moskovskiy institut stali.
(Metallurgical furnaces...Testing)



GLINKOV, M.A.; REKHTMAN, A. Ya.

Refect of aerodynamics on dust deposition in slag begins and vertical flues. Izv.vys.ucheb. zav.; chern. met. no.3:161-171 '61.

1. Moskovskiy institit stali. (MIRA 1/.:3)

(Metallurgical furnaces—Aerodynamics)

8/148/61/000/003/014/015 Al61/Al33

AUTHORS:

Glinkov, M. A., Forther, A. A.

TITLE:

The gas mechanics to seculonal functions for rapid steel heating

PERIODICAL: Izvestiya wysahikh wakahiykh zanedeniy. Chernava metallungiya, no. 3,

1961. 172 - 183

A detailed description is presented of tests with mapin-nearing tythone type sectional furnaces and those with burners directing but gas directly on the face of square billets. The flow was soudied in furnase models with the aid of water and dye, and with air. Parious Chamber drameters and different outlet duty dimensions were tested: the the thickory were of total and squame shape. The article includes dragrams showing the oil wispers measured in different spots of the chambers and calculations. The chick-protocol de a schematic element the flow in a chamber with burners invalved to the terms of ballet faced. Conclusions: The eyelone motion ensures a dependable light of hand intense burning of pas-air mixture, and the Coecemia with Jess I record to the lining propose a light weeperature in the lining and high heat in the harmon space, while in combination results in an indense head transfer your town . An similare . Journa Winn, walking

Cand 1/2

3/146/50/10/01/01/2014 10.5 The gas is dentity to be invalid The second of the same and Althought second non-uniform heaving in aquane bill but in thembers wish large diameter, may be sedused to a minimum be sellow a is get flameter of the outlet ducte, wider lowers. the flow speed at the indicate and the masses the zone of laminar flow. It is not possible to obtain a completely of form healthy of Equare tillets over the engine surface in a cyclone during e, don sub-teas scaled-n from the faces into the center of billet by heat conducting to terms them the from the rios. The nighest heat supply to supplate in the occupency dampes; heat pransfer from exclare to the billet body is administ when the gas jets are fine that to the conver of the billet faces, and this arrangement products more even beauting from the entire surface. In eyelone chambers of small diameter the landman zero at the billed is absent, the gas speed at the billed similar to organize and the head transfer by only year more intense. The most allaruszerus pramper lype is of small diameter and with partition walls. There are foligored and & So less thon references. ASSOCIATION: Moskowskip uns. . . . . . . . . . (Moskow Steel Tosti .. . . . ) SUBMITTED: June 21 1960 Card 2/2

3/148/61/000/009/011/012 E111/E135

11.7200

Glinkov, M.A., and Stepanov, Ye.M.

AUTHORS: TITLE:

Thermal ionization in a flame and intensification of

combustion by applying an electric field

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy

Chernaya metallurgiya, no.9, 1961 143-152.

TEXT: Stable combustion, with branching of chains, begins after the production of a definite concentration of free radicals and ionized particles. The initial energy impulse (whose magnitude depends on the energy barrier of the fuel molecules) leads to ionization and free-radical formation and the branching-chain combustion reaction. In the present work the authors report and discuss their experiments on combustion from the ionization aspect. The main part of the experiments was on pre-mixed air/gas mixtures with an excess-air coefficient of unity, [Abstractor's note: I think this means with the stoichiometric proportion of air for complete combustion,] with gas flows of 0.24, 0.52 and 0.72 nm3/hour and a burner bore of 15 mm. At all the gas flows the ratio of visible-flame length to length of inner Card 1/4

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Thermal ionization in a flame ...

cone was equal to 2.2. To prevent detachment of the flame a little gas was added through an annalar gap near the burner mouth. The ionization characteristics were measured every 10 mm along the flame, at 5-b radial points at each level. Measurements were also made when the gas/air mixture had not been pre-mixed additional investigation then being made of the effect of preheating of the gas (to 200, 400, 600 and 750  $^{\circ}$ C) on conization and temperature in the flame. Ionization was found by measuring flame conductivity using two 2-mm diameter diametrically opposed stainless-steel probes insulated in quartz tubes. The amplified current was measured with a micro-ammeter—the ionic concentration was not calculated. Temperature was measured with a platinum platinumrhodium thermocouple. The ionization maxima were found to be close to the temperature maxima. From the observed changes of conization and temperature up the flame it is concluded that in the initial part of the flame rapid ionization is produced due to rapid temperature rise here there are considerably more ionized than reacting molecules. After reaching a maximum, ionization falls rapidly, while temperature continues to rise until heat Card 2/4

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and make a series of the properties.

the fee to the surroundings leads to a slow fall. In this region Transfer to the conformed only for maintaining temperature; the comber to the control by the arrival of fresh fuel molecules. Transfer to plots show hysteresis loops whose transfer to the conformed on the conformed of the confo areas represent the amount of heat released in the combustion of a grown quantity of fuel ions. Since the calorific value of the gas . Authority constant, the ratio of gas flows shows the relative charges in hest evolution at different flows: the ratios agree that the losely with the ratio of the corresponding hysteresis-loop with a Without pro mixing but with preheating the ionization may small the fuel flow V according to

max 1 5V

is the unitial ionization of molecules, depending on here timbergours or other form of ionizing energy, and also on no treating to a pends on the fuel (0.51 and 0.58 for the fuel used and prehists of order and over 700 °C, respectively). Combustion the becauseful of by moving the ionization maximum towards the research the clame by applying any form of energy at the root. This was observed a experiments in which the heating rates of CAR I SEE

Thermal curve corners tham:

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E111/E135

metal observe with the same heating area were determined at some office of the flower with and without the application of an action of all the filed in its application is given]. Although a whate them is arts to flow the field, the effect is not not to be for the major of a single of the major of a single of the filed in the field. The effect of the total process with a reason form. The effect of the total process with a reason of any flow. Heat transfer from the filed in a superior with a few bath was increased 20-25% by reason when the filed that the a superior matter the same and the same and

GLINKOV, M.A., dohtor tekhn.nauk, prof.; DEMIN, G.I., kand.tekhn.nauk, dotsent

Operation of recirculating-type recuperative steel smelting forraces.

Stal: 21 no. 4:317-318 Ap 161.

1. Moskovskiy institut stali.

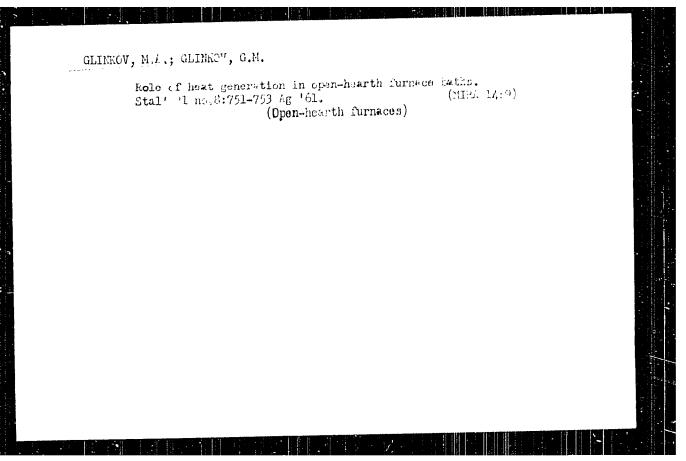
(Smelting furnaces)

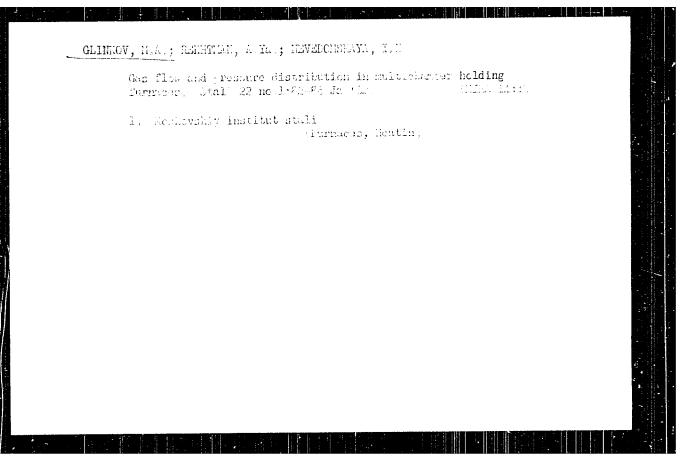
GLINKOV, M.A., doktor tekhn.nauk,prof.; GLINKOV, G.M., kand.tekhn.nauk

Response to A. D. Kliuchnikov's remarks. Stal' 21 no.6:566 Je '61.

(MIRA 14:5)

(Open-hearth furnaces—Design and construction)





3/19//62/000/006/071/232 1295/1308

AUTHORS:

Glinkey, M.A., Hen'shikov, R.I., Kaganov, V.Yu., and

Solomentsev, S.L.

TITLE:

4

Development of a complex automatic system for controlling the thermal and technological operating conditions

of fusion in open-hearth furnaces using computer

equipment

PERIODICAL: Referetivnyy znurnal. Avtomatika i redicelektronika, no. 6, 1962, abstract 6-2-200 u (V sb. Prineneniye vychisl. tekhn. dlya avtomatis. prois-va, K., Mashgiz,

1961, 223-257)

TEXT: Work carried out at the Department of Metal Purnaces of the Moskovskiy institut stali (Moscow Steel Institute) in 1957-58 has shown the possibility of designing a closed-loop controller of the thousand constitute and the most constitute and thermal operating conditions of an open-hearth furnace, where technological and organization factors are taken into account. The block diagram of a computer-type automotic control system has been developed in which the controlled parameter is the heat absorbed by Card 1/3

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Development of a complex automobile ...

the bath. In practice the heat absorbed by the bath is determined by the computer from the behavior of fusion by proceeding from the difference between the next input (the combustion of curben being allowed for) and the quantity of heat carried away by the products of combustion and expended for thereal Leaders. In the program unit heat absorption is assigned according to the releavior of train remained of fusion. The set value of next according to the stant of fusion is worked out by the program said according to the quantity of heat that must be transmisted to the bath up to the end of the period, according to beating schedule, carbon-contaction rate and other factors. The difference between the second assigned to the regulator. The regulating system is of the closed-loop type with respect to the basic parameter-heat absorption. The rate of liberation of carbon exides from the tath, the volume of the combustion products and the in-flow and observation of give the working space are determined according to the consumption of fuel, air consumption, total composition of the combustion products and by the result of measurement of their quantity to the general flue. It to obtained in the consumer unit on heat absorption and carbon confuse-Card 2/3

Development of a complex motor tic ... DISS/2008/ 6/071/232

tion, can be used for controlling frame reversing and for regulating the pressure in the working space. Hince reversing and for regulating the pressure in the working space. Hince reversing quentities depending on the precess conditions are checked periodictly in the circuit by m and of spot measurements of the corresponding tarameters. The computing formation requires a large number of measurements some of which are difficult to every but under conditions of open-hearth furnace production. Therefore a simplified procedure was developed in 1958-59 for determining the next absorbed by the both and the rate of combustion of carbon. 6 figures. [Abstracter's note: Complete translation.]

Card 3/3

GLINKOV, herk Alekseyevich; VAGIN, A.A., red. izd-va; SUSHKIN, I.N., red. izd-va; MIKHAYLOVA, V.V., tekhn, red.

[Principles of the general theory of furnaces]Osnovy obshched teorii peched. Izd.2., ispr. i dop. Moskva, Metallurgizata, 1962. 575 p.

(MIRA 15:9)

(Metallurgical furnaces—Design and construction)

GLINKOV, M.A.; PROSYAHOV, Yu.F.

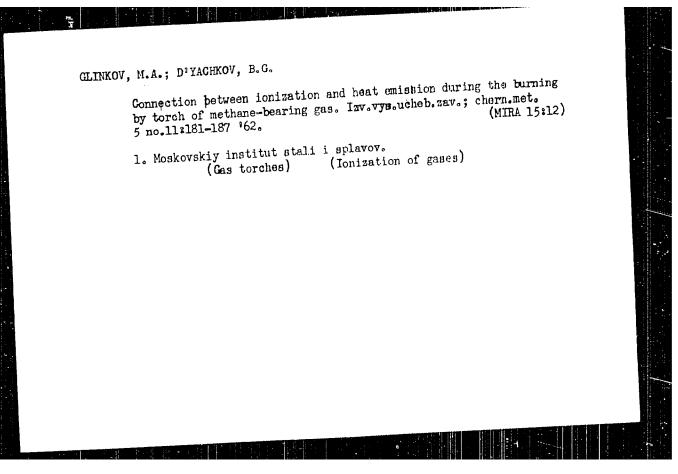
Effect of the properties of liquid fuel on the luminosity of open-hearth furnace flames. Izv. vys. ucheb. zav.; charm. met. 5 no.5:170-180 '62. (MRE. 15:6)

1. Moskovskiy institut stall i Izherskiy zaved. (Liquid fuela) (Open-hearth furnaces—Combustion)

GLINKOV, M.A.; SEROKHVOSTOV, A.L.

Mechanics of gases in the hearth of a uniflow and recirculating type steel smelting furnace. Izv. vys. ucheb. zav.; chern. met. 5 no.7:188-195 '62. (MIRA 15:8)

1. Moskovskiy institut stali i splavov. (Smelting furnaces) (Gas flow)



GLINKOV, M.A., prof., doktor tekin.nauk; PRCGYANOV, Yu.F., inzh.

Effect of liquid fuel properties and the design of atomizers on heat processes in open-hearth furnaces. Stal' 22 no.7:653-658
Jl '62.

1. Moskovskiy institut stali i Izhorski; zaved.
(Open-hearth furnaces--Design and construction)

CLINKOV, MA prof. doktor tekhn, nauk; MITKALINNYY, V.I., dotsent, kand.
tekhn, nauk; KHE YU-TSZIN' [Ho Yu-chin]

Characteristics of aerodynamics in 600 and 000-ton open-hearth
furnaces with single-channel ports. Stal' 22 no.11:1051-1055
N '62.

1. Moskovskiy institut stali.
(Open-hearth furnaces-Aerodynamics)

BUDRIN, Dmitriy Vasil'yevich; GLINKOV, Mark Alekseyevich, prof., doktor tekhn. nauk; KUZ'MIN, Mikhail Aleksandrovich; PLCTNIKOV, Liveriy Alekseyevich; SEL'IKIN, Iosif Denilovich; TROYB, Samuil Grigor'yevich; SAL'NIKOV, A.P., redlizd-va; ISLENT'YEVA, P.G., tekhn. red.

[Metallurgical turnaces] Metallurgicheskie pochi. [By] D.V. Budrin i dr. Moskva, Metallurgizdat. Pt.1. [Vuel. refractores, principles of heat engineering processes] Torlivo, ogneupory, osnovy pechnoi teplotekhniki. 1963. 436 p. (MIRA 16:10) (Metallurgical furnaces)

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Comparison of certain burner arrangements by their ionizing characteristics. Izv.vys.ucheb.zav.; chem.met. 6 no.lm170-184 (MIRA lo:2) '63.

1. Meakovskiy institut stall splayov. (Ges burners) (Ionization of games)
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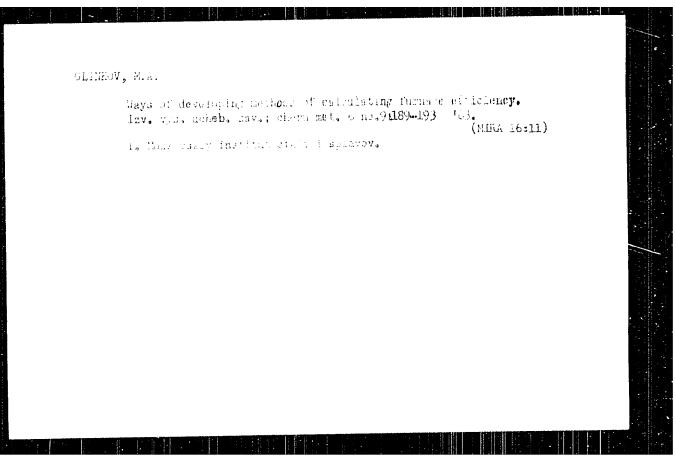
GLINKOV, M.A.; SEROKHOVOSTOV, A.L.

Mixing of flows in blast furance nearths with uniflow and recirculation. Izv. vys. ucheb. zav.; chern. met. 6 no.3: 203-208 163. (MIRA 16:5)

1. Moskovskiy institut stali i splavov. (Blast furances—Combustion) (Gas flow)

Results of the inter-universit, conference on methods of calculating metallurgical furnace efficiency. Izv. v/s. ucheb. zav.; chern. met. 6 no.5:135-187 '63. (MIRA 16:7)

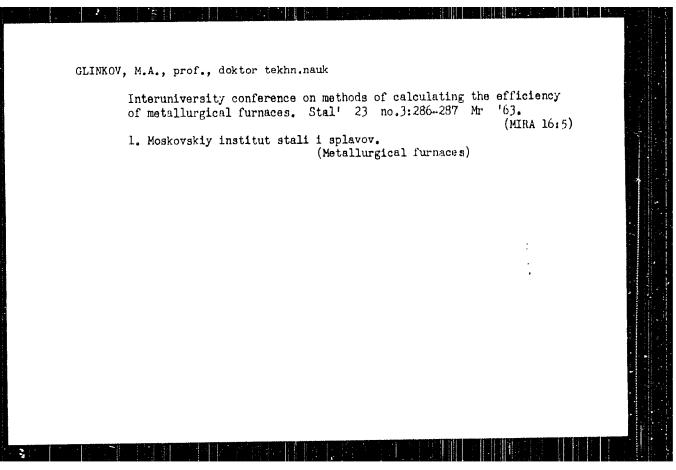
1. Moskovskiy institut stali i aplavov. (Metallurgical furnaces) (Heat--Transmission)

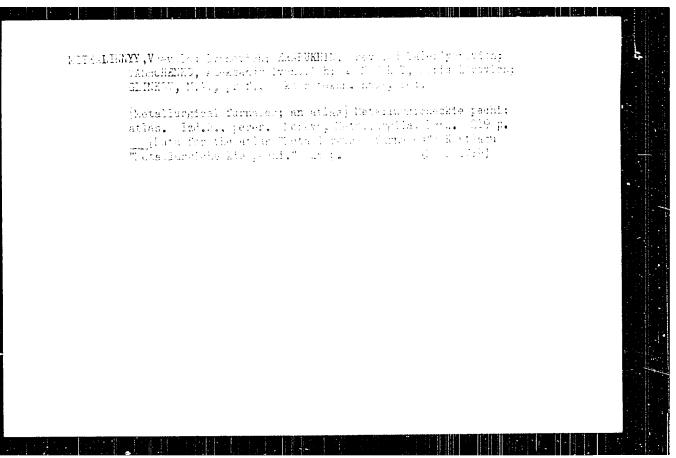


GLINKOV, M.A.; STULIPIN, Ye.A.

Heat generation in steel smelt on totals of 160 test open hearth furnaces. Izv. vys. ucheb. saw.; chern. med. o test1 323-229 (63. (MISA 17:3))

1. Moskovskiy institut sould bagbe of.





GLINKOV, M.A.; KAGANOV, V.Yu.; BLINOV, O.M.

Obtaining information necessary for the optimum control of thermal conditions in furnaces. Izv. vys. ucheb. zav.; chern. met. 7 no.1:162-165 '64. (MIRA 17:2)

1. Moskovskiy institut stali i splavov.

GLINKOV, M.A.; STUL'PIN, Ye.A.

Oxidizing properties of 500-ton open-hearth furnaces during the smelting period. Izv. vys. ucheb. zav.; chern. met. 7 no.1:174-177 164. (MIRA 17:2)

1. Moskovskiy institut stali i splavov.

